



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,984	03/17/2004	Donald R. Van Der Moere	D5270	3898
30409	7590	07/27/2006	EXAMINER	
INTERNATIONAL ENGINE INTELLECTUAL PROPERTY COMPANY			GARCIA, ERNESTO	
4201 WINFIELD ROAD			ART UNIT	
P.O. BOX 1488			PAPER NUMBER	
WARRENVILLE, IL 60555			3679	

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,984

Applicant(s)

VAN DER MOERE ET AL.

Examiner

Ernesto Garcia

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006 and 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,10-15 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10-15 and 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on June 19, 2006 has been entered.

Applicant should note that since two amendments after final were submitted, the request for RCE did not specify which amendment to be entered. The examiner has considered the amendment filed on June 19, 2006 for the basis of this Office action. In the future, applicant needs to state which amendment needs to be entered since one amendment has other limitations that the other does not have, e.g., the word "bushinglessly" is not in the amendment filed on June 19, 2006.

Claim Rejections - 35 USC § 112

Claims 8 and 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Regarding claim 8, it is unclear whether both the piston pin and the connecting rod comprise each a piston pin exterior margin, or just the piston pin. For purposes of examination, the examiner has assumed the piston pin comprises a piston pin exterior margin.

Regarding claims 10-14, the claims depend from claim 8 and therefore are indefinite.

Claim Rejections - 35 USC § 102

Claims 1, 3, 4, 6, and 7, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 1, Komuro et al. disclose, in Figure 3, a piston pin comprising a piston pin exterior margin 13 coated with a chromium-nitride (Cr-N) coating (col. 7, lines 47-50). Applicants should note that the exterior margin is shiftably able to mate with an

inside margin of a pin bore of an appropriately sized connecting rod without employing an intervening bushing. Applicants should note that the structural language of the claims reads on the prior art structure. Further, applicants should note that the claim does not require the coating be mated with the inside margin of the pin bore of the connecting rod but rather whether it is capable of being mated with the inside margin of a pin bore of a connecting rod.

Regarding claim 3, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when Komuro possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 4, the chromium-nitride coating was deposited to a depth of between 1 and 10 microns (col. 2, line 40).

Regarding claim 6, the coating is buffed. Applicants should note that the roller fatigue test apparatus inherently buffs the material until the coating peels off.

Regarding claim 7, the coating is buffed. Applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined

irrespective of whether process steps are recited. Accordingly, how the coating is buffed, e.g., in a centerless buffing operation, is of little consequence when Komuro possesses such a buffed coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Claim Rejections - 35 USC § 103

Claim 5 is rejected under 35 U.S.C. 103(b) as being anticipated by Komuro et al., 5,851,659.

Regarding claim 5, Komuro et al. disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 8, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558.

Regarding claim 8, McKone discloses, in Figure 6, a combination of a piston pin **17** and a connecting rod **18**. The piston pin **17** has a piston pin exterior margin. The pin bore and the piston pin are mating. The mating is a shiftable surface-to-surface engagement without employing an intervening bushing. Note that Figure 1 in McKone uses a bushing and Figure 6 does not use a bushing.

However, McKone fails to disclose the exterior margin having a coating being comprised of chromium-nitride. Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard nitride of the metals in the third to sixth group of the periodic table to produce a sliding bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the sixth group of the periodic table and chromium-nitride falls within the description as a layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the piston pin of McKone with a coating of chromium-nitride to provide a sliding bearing layer. Given the modification, the coating is a chromium-nitride coating disposed on the tubular body.

Regarding claim 10, applicants are reminded that it is the patentability of the product, not recited process steps, that is to be determined irrespective of whether only process steps are recited. Accordingly, how the Cr-N coating is deposited, e.g., by physical vapor deposition, is of little consequence when McKone as modified by

Kochendorfer et al. possesses such coating. Therefore, this limitation has been given limited patentable weight. See MPEP 2113.

Regarding claim 15, McKone discloses, in Figure 6, a method comprising:
forming a piston pin body **17** having an exterior margin;
forming an inside surface margin of a connecting rod **18** of a certain material,
including the surface of a pin bore; and,
mating the exterior margin of the tubular body **17** with the inside surface margin
of the pin bore in a shiftable inside surface-to-surface engagement without employing
an intervening bushing. However, McKone fails to coat the exterior margin with a
chromium-nitride material.

Kochendorfer et al. teach coating the exterior margin of a piston pin with a hard
nitride of the metals in the third to six group of the periodic table to produce a sliding
bearing layer (col. 2, lines 45-50). Applicants should note that Chromium (Cr) is in the
sixth group of the periodic table and chromium-nitride falls within the description as a
layer. Therefore, as taught by Kochendorfer et al., it would have been obvious to one of
ordinary skill in the art at the time the invention was made to provide the exterior margin
of McKone with a coating of chromium-nitride to provide a sliding bearing layer.

Claims 10-12 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, as applied to claims 8-10, 15, and 16, and further in view of Komuro et al., 5,851,659.

Regarding claims 10 and 17, McKone as modified by Kochendorfer et al., fail to deposit the chromium-nitride coating by physical vapor deposition. Komuro et al. teach depositing chromium-nitride coating through physical vapor deposition as an ion plating process to provide resistance to peeling, abrasion and baking (see Abstract). Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating by physical vapor deposition to provide resistance to peeling, abrasion, and baking.

Regarding claims 11 and 18, McKone as modified by Kochendorfer et al., fail to disclose to deposit the chromium-nitride coating to a depth of between 1 and 10 microns. Komuro et al. teach a chromium-nitride coating deposited to a depth of between 1 and 80 microns (col. 2, line 40) as part of a design consideration of a sliding surface. The range of 1 and 10 microns falls within this disclosed range. Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit the chromium-nitride coating to a depth of between 1 and 10 microns as determined through routine experimentation and optimization.

Regarding claims 12 and 19, McKone, as modified by Kochendorfer et al. and Komuro et al., disclose the chromium-nitride coating deposited to a depth of a range of 1-80 microns (co. 2, line 40). However, Komuro et al. does not disclose "substantially 5 microns". Applicants should note, that in a design consideration, one skilled in the art will choose a depth of 5 microns thus reading on "substantially 5 microns". Therefore, as taught by Komuro et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a depth of substantially 5 microns as part of a design consideration.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, and Komuro et al., 5,851,659, as applied to claims 10-12 and 17-19, and further in view of Fukutome et al., 5,601,293.

Regarding claims 13 and 20, McKone, as modified above, fails to disclose buffing the chromium-nitride after deposition. Fukutome et al. suggest treating the surface roughness of a chromium-nitride coating to resist wear (col. 7, line 18-21) as evidenced by the results. Therefore, as taught by Fukutome et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to buff the chromium-nitride after deposition to treat the surface roughness to resist wear.

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKone, 1,491,155, in view of Kochendorfer et al., 4,406,558, Komuro et al., 5,851,659, and Fukutome et al., 5,601,293, as applied to claims 13 and 20 above, and further in view of Wakefield, 3,757,378.

Regarding claim 21, as modified above, Fukutome et al. fail to disclose the buffing operation used. Wakefield teaches a centerless buffing operation to polish components. Therefore, as taught by Wakefield, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a centerless buffing operation to buff the coating of chromium-nitride.

Response to Arguments

Applicants' arguments filed on May 10, 2006 and on June 19, 2006 have been fully considered but they are not persuasive.

Applicants' arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. In particular, no arguments for the patentability of the claims over the art rejection of record have been presented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30-5:30. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EL

E.G.

July 24, 2006

Daniel P Stodola

DANIEL P. STODOLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600